

Activity #8



Title: Infrared Energy and the Remote Control-TEACHER'S ANSWER SHEET

In the following data chart, describe the various sounds produced by the particular brand of remote controller in the specified mode. Be as specific as possible in your descriptions, as there may be only very subtle differences between many.

1., 2., & 3.

| Brand of controller | TV mode | VCR mode | DVD mode | Cable box mode | Maximum operating distance (meters) |
|------------------------|------------------|-------------|--------------|-----------------|-------------------------------------|
| Brands used will vary. | Students will | hear sounds | of different | itches that are | pulsing at |
| Brands used will vary. | different rates. | | | | |
| Brands used will vary. | | | | | |
| Brands used will vary. | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

4. Each appliance operates at a slightly different pitch (or wavelength of infrared energy) and also at a different pulse rate.
5. Each brand of controller is probably assigned a certain wavelength or frequency of infrared light at which to communicate with the appliance. Other brands of appliances will not respond if the frequency of the command signal does not match its receiver.
6. Like visible light, the infrared beam spreads out over distance. This weakens the signal that is received by the appliance to the point where it is no longer functional.
7. Nothing is seen (with the naked eye) when viewing the LED while it is transmitting signals.
8. When observed through the viewfinder of a camcorder (or digital camera), a pulsing light is seen while signals are being transmitted.

9. Although infrared light is invisible to the human eye, a camcorder's viewfinder must be sensitive to these long wavelengths of energy and able to convert them to wavelengths that are visible to the observer.
10. Is it very possible that of the many brands of remote controllers brought in by your students, two or more may have the same pitched sounds/pulse rates for the various modes (TV, VCR, DVD, etc.). These cores were most likely manufactured in the same plant, employing different covers for respective brand names.
11. It is most likely that your students do NOT remember "life" without remote controllers. The remote controllers have improved the quality of life for many by allowing invalids and others with physical impairments to enjoy the option of channel selection, volume control, etc. while being bed-ridden or physically unable to operate the controls of an appliance (ex. people without the use of their hands can operate a remote controller with a pencil or wand held in their teeth).
12. A detrimental effect of the remote controller is that it is encouraging a society that partakes in less and less exercise of any sort to become even more lethargic. Also, it is possible (although unlikely) that long range to exposure to the infrared energy may have detrimental effects on the human body that have not surfaced to date.